



Salinity

OVERVIEW

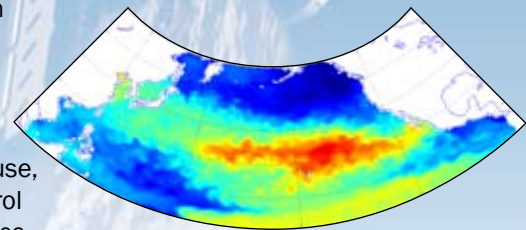
Salinity is one of the most fundamental properties of seawater. It has been measured directly for centuries, perhaps most notably by Benjamin Franklin as part of his efforts to map the Gulf Stream. Almost all of the information on ocean salinity has been collected by ships and has been largely confined to shipping routes. Most of the southern hemisphere remains unsampled. Thus far, remote sensing of ocean salinity has been only through limited airborne measurements. Three decades of scientific and technical development have now made it possible to accurately measure global sea-surface salinity (SSS) from an orbit 657 kilometers (408 miles) above Earth's surface.

Scheduled for launch in May 2010, the U.S.-Argentine Aquarius/SAC-D satellite mission is designed with SSS as its primary measurement. Over its three-year baseline mission, data from this pioneering satellite will reveal changing SSS patterns over the ice-free global oceans. The Aquarius instrument will collect more SSS data than had been amassed in the previous 100 years. The SAC-D Satellite, built by the Space Agency of Argentina, will accommodate the primary Aquarius SSS instrument plus several Argentinian SAC-D instruments, as well as



instruments from the French and Italian space agencies.

SSS data will be highly complementary to existing satellite programs that monitor sea surface temperature because, together, salinity and temperature control density at the ocean surface. Sea-surface density drives formation of ocean water masses and ocean circulation. Thus better understanding of SSS patterns will improve understanding of the ocean's capacity to store and transport heat and regulate Earth's climate. In addition, monthly maps of global SSS will improve understanding of the interaction between ocean circulation and the global water cycle.



FACTS

- Aquarius will provide pioneering sea surface salinity (SSS) observations of the global ice-free ocean.
- Deliver 150-kilometer resolution SSS maps over a three-year mission lifetime.
- Provide monthly global maps of SSS with an accuracy of 0.2 practical salinity units (psu). One psu is close to the number of grams of salt per kilogram of seawater. The accuracy of Aquarius's monthly average salinity measurement will be about a "pinch" of salt in one gallon of water.
- Record more SSS data in two months than has been measured since the dawn of oceanography 125 years ago
- Measure the entirety of the ocean surface every seven days for three years and explore regions of the world's ocean never before measured.

